GEOCHEMICAL EVALUATION OF HEAVY METAL CONCENTRATION OF AMBIENT PARTICULATE MATTER (PM10) AND SOILS OF SELECTED AREAS IN LAGOS METROPOLIS, NIGERIA

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Recent studies have pointed to evidence that coarse particle in the air as well as heavy metal contents of soils could be significant contributor to respiratory and cardiovascular diseases. This study was aimed at determining the metallic constituents of particulate matter and soils of part of Lagos Metropolis and their potential environmental significance. Thirty (30) PM10 samples were collected using High Air Volume Sampler (#1500) with cellulose filter disk while twenty five (25) composite soil samples were collected from the study area. All the samples were digested and the extract analysed for their metals contents using Inductively Coupled Plasma-Mass Spectrometry. The pH of the soil samples ranges from 5.6-8.8 and the Electrical Conductivity ranges 206- 1353 µS/cm. The result of soil analysis in ppm revealed the following ranges of composition: Cu (20-156), Pb (35-938), Zn (50-170), Ni (10-52), Cr (38-114), Co (5-26), Mn (173-1049), V (30-195), Sr (40-220), Ba (55-844), and Th (16-97). The following metal concentration values were obtained (in ppm) for the particulate samples: Zn (4.747.5), Mn (5.0-20.0), Sr (3.6 - 6.1), Ba (1.5- 8.1), Cu (1.8-13.7), Pb (1.0-5.0), Cr (1.0-2.0), V (0.5-1.7) and Zr (0.6-1.3).The various result showed significant enrichment for most of the metals when compared with their calculated background value. Further evaluation of the result indicated that contamination occurred mostly in densely populated and areas of high commercial activity. Reasonable high levels were also observed in the samples collected along the major highways where traffic is quite intense.

Keywords: heavy metals, PM10 samples, contamination